

# Construction and Building Inspectors

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## Significant Points

- Almost half of all inspectors worked for local governments, primarily municipal or county building departments.
- Opportunities should be best for experienced construction supervisors and craftworkers who have some college education, engineering or architectural training, or certification as construction inspectors or plan examiners.
- Home inspection is becoming a standard practice in the home purchasing process, creating more opportunities for home inspectors.

## Nature of the Work

Construction and building inspectors examine the construction, alteration, or repair of buildings, highways and streets, sewer and water systems, dams, bridges, and other structures to ensure compliance with building codes and ordinances, zoning regulations, and contract specifications. Building codes and standards are the primary means by which building construction is regulated in the United States for the health and safety of the general public. Inspectors make an initial inspection during the first phase of construction, and followup inspections throughout the construction project to monitor compliance with regulations. However, no inspection is ever exactly the same. In areas where certain types of severe weather or natural disasters—such as earthquakes or hurricanes—are more common, inspectors monitor compliance with additional safety regulations designed to protect structures and occupants during these events.

In the past, most localities based their building codes on regional model codes established by the Building Officials and Code Administration (BOCA), the International Conference of Building Officials (ICBO), or the Southern Building Code Congress International (SBCCI). Therefore, building inspectors in one region who were experts in one code found it difficult to move to an area of the country in which another code was used. To eliminate differences among the three sets of codes, these organizations jointly created the International Code Council (ICC) in 1994 and released the Nation's first set of uniform building code regulations in 2000. In 2003, BOCA, ICBO and SBCCI consolidated their operations into the ICC. All code development and support services are now provided by the ICC. This makes it much easier for construction and building inspectors to work in different regions within the United States.

There are many types of inspectors. *Building inspectors* inspect the structural quality and general safety of buildings. Some specialize in such areas as structural steel or reinforced concrete structures. Before construction begins, *plan examiners* determine whether the plans for the building or other structure comply with building code regulations and if they are suited to the engineering and environmental demands of the building site. Inspectors visit the worksite before the foundation is poured to inspect the soil condition and positioning and depth of the footings. Later, they return to the site to inspect the foundation after it has been completed. The size and type of structure, as well as the rate of completion, determine the number of other site visits they must make. Upon completion of the project, they make a final, comprehensive inspection.

In addition to structural characteristics, a primary concern of building inspectors is fire safety. They inspect structures' fire sprinklers, alarms, and smoke control systems, as well as fire exits. Inspectors assess the type of construction, building contents, adequacy of fire protection equipment, and risks posed by adjoining buildings.

*Electrical inspectors* examine the installation of electrical systems and equipment to ensure that they function properly and comply with electrical codes and standards. They visit worksites to inspect new and existing sound and security systems, wiring, lighting, motors, and generating equipment. They also inspect the installation of the electrical wiring for heating and air-conditioning systems, appliances, and other components.

*Elevator inspectors* examine lifting and conveying devices such as elevators, escalators, moving sidewalks, lifts and hoists, inclined railways, ski lifts, and amusement rides.

*Mechanical inspectors* inspect the installation of the mechanical components of commercial kitchen appliances, heating and air-conditioning equipment, gasoline and butane tanks, gas and oil piping, and gas-fired and oil-fired appliances. Some specialize in boilers or ventilating equipment as well.

*Plumbing inspectors* examine plumbing systems, including private disposal systems, water supply and distribution systems, plumbing fixtures and traps, and drain, waste, and vent lines.

*Public works inspectors* ensure that Federal, State, and local government construction of water and sewer systems, highways, streets, bridges, and dams conforms to detailed contract specifications. They inspect excavation and fill operations, the placement of forms for concrete, concrete mixing and pouring, asphalt paving, and grading operations. They record the work and materials used so that contract payments can be calculated. Public works inspectors may specialize in highways, structural steel, reinforced concrete, or ditches. Others specialize in dredging operations required for bridges and dams or for harbors.

*Home inspectors* conduct inspections of newly built or previously owned homes. Home inspection is becoming a standard practice in the home purchasing process. Prospective home buyers hire home inspectors to inspect and report the condition of a home's systems, components, and structure. They typically are hired either immediately prior to a purchase offer on a home, or as a contingency to a sales contract. In addition to structural quality, home inspectors inspect all home systems and features, including roofing as well as plumbing, electrical, and heating or cooling systems.



*Home inspection is becoming a standard practice in the home-purchasing process.*

The owner of a building or structure under construction employs *specification inspectors* to ensure that work is done according to design specifications. They represent the owner's interests, not those of the general public. Insurance companies and financial institutions also may use the services of specification inspectors.

Details concerning construction projects, building and occupancy permits, and other documentation generally are stored on computers so that they can easily be retrieved, kept accurate, and updated. For example, inspectors may use laptop computers to record their findings while inspecting a site. Most inspectors use computers to help them monitor the status of construction inspection activities and keep track of issued permits. Many inspectors also use a paper checklist to detail their findings.

Although inspections are primarily visual, inspectors may use tape measures, survey instruments, metering devices, and test equipment such as concrete strength measurers. They keep a log of their work, take photographs, file reports, and, if necessary, act on their findings. For example, construction inspectors notify the construction contractor, superintendent, or supervisor when they discover a code or ordinance violation or something that does not comply with the contract specifications or approved plans. If the problem is not corrected within a reasonable or specified period, government inspectors have authority to issue a "stop-work" order.

Many inspectors also investigate construction or alterations being done without proper permits. Inspectors who are employees of municipalities enforce laws pertaining to the proper design, construction, and use of buildings. They direct violators of permit laws to obtain permits and submit to inspection.

### **Working Conditions**

Construction and building inspectors usually work alone. However, several may be assigned to large, complex projects, particularly because inspectors tend to specialize in different areas of construction. Although they spend considerable time inspecting construction worksites, inspectors also spend time in a field office reviewing blueprints, answering letters or telephone calls, writing reports, and scheduling inspections.

Inspection sites are dirty and may be cluttered with tools, materials, or debris. Inspectors may have to climb ladders or many flights of stairs, or crawl around in tight spaces. Although their work generally is not considered hazardous, inspectors, like other construction workers, wear hard hats and adhere to other safety requirements while at a construction site.

Inspectors normally work regular hours. However, they may work additional hours during periods when a lot of construction is taking place. Also, if an accident occurs at a construction site, inspectors must respond immediately and may work additional hours to complete their report. Nongovernment inspectors may have a varied work schedule. At times, they may work evenings and weekends.

### **Employment**

Construction and building inspectors held about 84,000 jobs in 2002. Local governments, primarily municipal or county building departments, employed 48 percent. Employment of local government inspectors is concentrated in cities and in suburban areas undergoing rapid growth. Local governments employ large inspection staffs, including many plan examiners or inspectors who specialize in structural steel, reinforced concrete, boiler, electrical, and elevator inspection.

Another 21 percent of construction and building inspectors worked for architectural and engineering services firms, conducting inspections for a fee or on a contract basis. Many of these were

home inspectors working on behalf of potential real estate purchasers. Most of the remaining inspectors were employed in other services industries or by State governments.

### **Training, Other Qualifications, and Advancement**

Although requirements vary considerably depending upon where one is employed, construction and building inspectors should have a thorough knowledge of construction materials and practices in either a general area, such as structural or heavy construction, or a specialized area, such as electrical or plumbing systems, reinforced concrete, or structural steel. Applicants for construction or building inspection jobs need several years of experience as a construction manager, supervisor, or craftworker. Many inspectors previously worked as carpenters, electricians, plumbers, or pipefitters.

Because inspectors must possess the right mix of technical knowledge, experience, and education, employers prefer applicants who have formal training as well as experience. Most employers require at least a high school diploma or equivalent, even for workers with considerable experience. More often, employers look for persons who have studied engineering or architecture, or who have a degree from a community or junior college, with courses in building inspection, home inspection, construction technology, drafting, and mathematics. Many community colleges offer certificate or associate degree programs in building inspection technology. Courses in blueprint reading, algebra, geometry, and English also are useful.

Construction and building inspectors must be in good physical condition in order to walk and climb about construction sites. They must also have a driver's license. In addition, Federal, State, and many local governments may require that inspectors pass a civil service exam.

Construction and building inspectors usually receive much of their training on the job, although they must learn building codes and standards on their own. Working with an experienced inspector, they learn about inspection techniques; codes, ordinances, and regulations; contract specifications; and recordkeeping and reporting duties. They may begin by inspecting less complex types of construction, such as residential buildings, and then progress to more difficult assignments. An engineering or architectural degree is often required for advancement to supervisory positions.

Because they advise builders and the general public on building codes, construction practices, and technical developments, construction and building inspectors must keep abreast of changes in these areas. Continuing education is imperative in this field. Many employers provide formal training programs to broaden inspectors' knowledge of construction materials, practices, and techniques. Inspectors who work for small agencies or firms that do not conduct training programs can expand their knowledge and upgrade their skills by attending State-sponsored training programs, by taking college or correspondence courses, or by attending seminars sponsored by various related organizations, such as the building code organization.

Most States and cities require some type of certification for employment; even if not required, certification can enhance an inspector's opportunities for employment and advancement to more responsible positions. To become certified, inspectors with substantial experience and education must pass stringent examinations on code requirements, construction techniques, and materials. The ICC offers voluntary certification, as do other professional membership associations. In most cases, there are no education or experience prerequisites, and certification consists of passing an examination in a designated field. Many categories of certification are

awarded for inspectors and plan examiners in a variety of disciplines, including the Certified Building Official (CBO) designation.

**Job Outlook**

Job opportunities in construction and building inspection should be best for highly experienced supervisors and construction craftworkers who have some college education, engineering or architectural training, or certification as inspectors or plan examiners. Thorough knowledge of construction practices and skills in areas such as reading and evaluating blueprints and plans is essential.

Employment of construction and building inspectors is expected to grow about as fast as the average for all occupations through 2012. Growing concern for public safety and improvements in the quality of construction should continue to stimulate demand for construction and building inspectors. In addition to the expected employment growth, some job openings will arise from the need to replace inspectors who transfer to other occupations or leave the labor force.

Inspectors are involved in all phases of construction, including maintenance and repair work, and are therefore less likely to lose jobs when new construction slows during recessions. As the population grows and the volume of real estate transactions increases, greater emphasis on home inspections should result in strong demand for home inspectors. In addition, there should be job opportunities for inspectors in firms specializing in architectural, engineering, and related services as governments—particularly Federal and State—contract out inspection work, and as private inspection services grow.

**Earnings**

Median annual earnings of construction and building inspectors were \$41,620 in 2002. The median hourly earnings were \$20.01. The middle 50 percent earned between \$15.81 and \$25.05. The lowest 10 percent earned less than \$12.53, and the highest 10 percent earned more than \$30.10. Median annual earnings in the industries employing the largest numbers of construction and building inspectors in 2002 were:

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| Local government .....                                 | \$42,260 |
| Architectural, engineering, and related services ..... | 40,770   |
| State government .....                                 | 39,610   |

Generally, building inspectors, including plan examiners, earn the highest salaries. Salaries in large metropolitan areas are substantially higher than those in small jurisdictions.

**Related Occupations**

Construction and building inspectors combine knowledge of construction principles and law with an ability to coordinate data, diagnose problems, and communicate with people. Workers in other occupations using a similar combination of skills include architects, except landscape and naval; construction managers; civil engineers; cost estimators; drafters; engineering technicians; and surveyors, cartographers, photogrammetrists, and surveying technicians.

**Sources of Additional Information**

Information about certification and a career as a construction or building inspector is available from the following model code organization:

➤ International Code Conference, 5203 Leesburg Pike, Suite 600, Falls Church, VA 22041. Internet: <http://www.iccsafe.org>

For more information about construction inspectors, contact:

➤ Association of Construction Inspectors, 1224 North Nokomis NE., Alexandria, MN 56308. Internet: <http://www.iami.org/aci>

For more information about training and requirements for electrical inspectors, contact:

➤ International Association of Electrical Inspectors, 901 Waterfall Way, Suite 602, Richardson, TX 75080-7702. Internet: <http://www.iaei.org>

For information about becoming a home inspector, contact:

➤ American Society of Home Inspectors, 932 Lee St., Suite 101, Des Plaines, IL 60016. Internet: <http://www.ashi.org>

➤ National Association of Certified Home Inspectors, 1220 Valley Forge Rd., Building 47, P.O. Box 987, Valley Forge, PA 19482-0987. Internet: <http://www.nachi.org>

➤ Housing Inspection Foundation, 1224 North Nokomis NE., Alexandria, MN 56308. Internet: <http://www.iami.org/hif.cfm>

➤ National Association of Home Inspectors, 4248 Park Glen Rd., Minneapolis, MN, 55416. Internet: <http://www.nahi.org>

For information about a career as a State or local government construction or building inspector, contact your State or local employment service.